



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

[Handwritten signature]

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,124	08/25/2004	Gregory Link	81093153 / FMC 1679 PUSP	5123
28395	7590	10/18/2005	EXAMINER	LE, JOHN H
BROOKS KUSHMAN P.C./FGTL 1000 TOWN CENTER 22ND FLOOR SOUTHFIELD, MI 48075-1238			ART UNIT	PAPER NUMBER
			2863	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/711,124	LINK ET AL.
	Examiner	Art Unit
	John H. Le	2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 9-21 is/are allowed.
- 6) Claim(s) 1-2 is/are rejected.
- 7) Claim(s) 3-8 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 25 August 2004 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>08/25/04</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. Claim 1 is rejected under 35 U.S.C. 103(a) as obvious over Wang et al. (USP 6,684,844).

Regarding claim 1, Wang et al. disclose a method for analyzing waviness (roughness) of a surface (abstract), the method comprising: measuring a height (D) of the surface over a predetermined distance (length) with a surface profile (e.g. Fig.2a, 5a, Col.3, lines 26-36, 56-62); processing data gathered with the surface profile to produce a set of data points indicative of a waviness profile (roughness profile) (e.g. fig.2a, 5a, Col.3, line 56-Col.4, line 20); selecting a subset of the set of data points; determining a peak value and a valley value of the subset (e.g. Fig.2a, 5a, Col.3, lines 26-36); calculating a waviness height of the subset based on the peak and valley values (e.g. Fig.2a, 5a, Col.3, lines 26-36); repeating the selecting, determining, and calculating steps (turning operation) for additional subsets until all members of the set of data points have been selected; and selecting a maximum waviness height value (the difference between the highest peak and lowest valley) from the waviness heights calculated for each subset (e.g. Fig.2a, 5a, Col.3, lines 26-36).

Although a surface profiling instrument is not located above the a method for analyzing waviness of a surface in Wang et al., however it would have been obvious to one of ordinary skill at the time the invention was made to including a surface profiling instrument for purpose of producing a set of data points indicative of a waviness profile since Wang et al. teach processing data gathered with the surface profile to produce a

set of data points indicative of a waviness profile (roughness profile) (e.g. Fig.2a, 5a, Col.3, line 56-Col.4, line 20).

2. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (USP 6,684,844) as applied to claim 1 above, and further in view of Meeks et al. (USP 6,392,749).

Regarding claim 2, Wang et al. fail to teach the surface profiling instrument is a profilometer.

Meeks et al. teach a high speed optical profilometer for measuring surface height variation (e.g. Fig. 29, Col.29, lines 46-49)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a profilometer as taught by Meeks et al. in a method for analyzing waviness of Wang et al. for the purpose of providing a high speed optical profilometer for measuring surface height variation.

Allowable Subject Matter

3. Claims 9-21 are allowed.
4. Claims 3-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 9, none of the prior art of record teaches or suggests the combination of a method for analyzing waviness of a machined surface, the method

comprising: obtaining a data set having a plurality of sequential data points indicative of a waviness profile of the machined surface; establishing a size of a data processing window representing a predetermined number of sequential data points; positioning the data processing window to include a first data point in the data set; selecting a subset of the data set; determining a peak value and a valley value of the subset; calculating a peak-to-valley waviness height based on the difference between the peak and valley values; indexing the data processing window to select another subset having at least one different member than a previous subset; repeating the selecting, determining, calculating, and indexing steps until each data point in the data set has been selected at least once. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 13, none of the prior art of record teaches or suggests the combination of a method for analyzing waviness of a surface, the method comprising: measuring a height of the surface with a surface profiling instrument to obtain data over a predetermined distance; fitting a regression line to the data; subtracting the regression line from the data over the predetermined distance; filtering the data to determine a waviness profile having a set of data points; selecting a subset of the set of data points that includes a predetermined number of consecutive data points; determining a peak value and a valley value of the subset; calculating a peak-to-valley height of the subset based on a difference between the peak and valley values; repeating the selecting, determining, and calculating steps for additional subsets until all data points have been

selected at least once; selecting a maximum waviness height value from the peak-to-valley heights calculated for each subset; comparing the maximum height waviness value to a threshold value indicative of a localized waviness region; and rejecting the part if the maximum waviness height value exceeds the threshold value.. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Other Prior Art

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Sermon et al. (USP 6,882,956) disclose an apparatus for topographic measurement of a surface of a lapping plate, comprising: a probe for measuring a height of the surface at a plurality of measurement points each having a radial position and an angular position on the surface of the lapping plate.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John H. Le whose telephone number is 571 272 2275. The examiner can normally be reached on 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on 571 272 2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

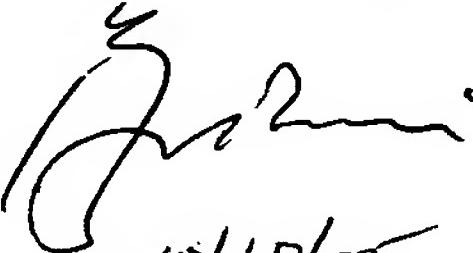
JL

John H. Le

Patent Examiner-Group 2863

October 17, 2005

BRYAN BUI
PRIMARY EXAMINER


10/17/05